BASELINE ROAD PROJECT (Phase-1), COLOMBO, SRI LANKA

Kumagai Gumi Co., Ltd. Sri Lanka Branch Member ○ FUJIKAWA, kosei
Kumagai Gumi Co., Ltd. Sri Lanka Branch UMEHARA, tokuo
Kumagai Gumi Co., Ltd. Sri Lanka Branch KUMASHIRO, naohiro
Kumagai Gumi Co., Ltd. Sri Lanka Branch OZAWA, hiroshi

1. Introduction

This project is the improvement and extension of the existing Baseline Road, which was constructed more than 100 years ago as a major part of the infrastructure of Sri Lanka. With the rapid increase in traffic in Colombo i.e. 75 % per annum, this project was planned as a herald of improvements to many other major roads to ease heavy traffic congestion.

The railway crossing viaduct (fig.1) and the pedestrian subway (fig.2) are first major viaduct and subway in Sri Lanka. During course of the construction, the project encountered an enormous number of obstructions in the ground by unrecorded existing utilities.

This paper describes the planning, coordination and construction management of the railway crossing viaduct and the pedestrian subway disturbed by existing underground utilities.

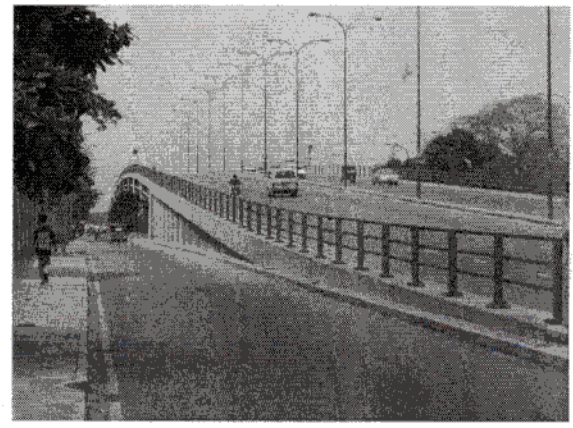

Fig. 1 Railway Crossing Viaduct

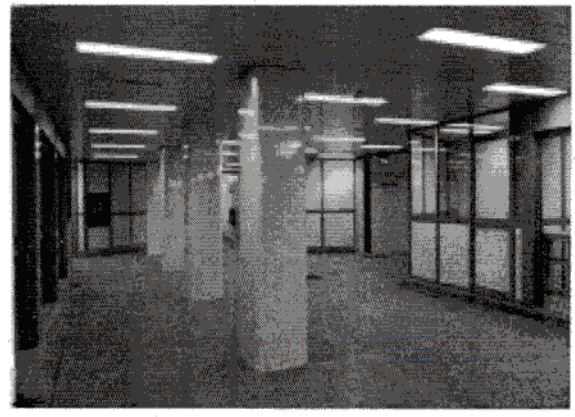

Fig. 2 Pedestrian Subway

2. Outline of Project

The project is 4.75km road construction extending from North to South in the center of Colombo.

- Project Name : Baseline Road Improvement and Extension Project-Phase 1
- Client : Road Development Authority
- Consultant : Nippon Koei Co. Ltd. in associated with WS Atkins International Ltd.
- Construction Period : 18 Dec. 1996 - 21 Sep. 2000
- Major Work : - Railway Crossing Viaduct (Pre-Tensioned PC Girder 240 Nos.) : 15m(w)* 235m(L)*2 units
  - Pedestrian Subway : RC Box Culvert 3~11.5 m(w)*3 m(H)*172 m(L)*1 unit
  - Asphalt Paved Road(Dual 3 Lanes) : 30m(w)*4,750m(L)

3. Construction of Railway Crossing Viaduct

During construction of the railway crossing viaduct, safety management of substructure work and PC girder erection work adjacent to the existing railway was most significant, due to necessity of maintenance of existing dual 1 lane road traffic and the operation of the existing railway. Local safety managers were trained, based on Kumagai Gumi Safety Management Policy by experienced and qualified senior Japanese staff. Prior to substructure work , existing

Key Words: First Major Viaduct and Subway, Two-level Crossing, Construction Management, Safety Management, Technical Transfer, Utility Obstruction Committee
Contact: Kumagai Gumi Co., Ltd. 2-1 Tsukudo-cho, Shinjuku-ku, Tokyo, JAPAN
Tel: +81-3-3235-8639 Fax: +81-3-5229-7090

underground utilities within the work area were investigated by us and relocated by the utility authority. In construction of the T-shaped substructure, we paid utmost attention to safety during placement of concrete to avoid any intrusion into track clearance due to settlement. Production of PC girder (240 nos./280 days) was a very successful case of technical transfer by one Japanese technical expert. Many temporary apparatuses i.e. gantry crane, steel form were locally fabricated by his own invention due to the material procurement difficulty. Erection of PC girder above the railway track were carefully executed by 2 units of 50t mobile crane.

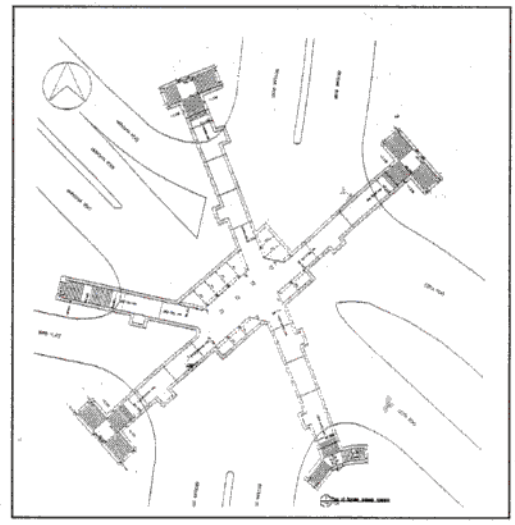

Fig. 3 Layout Plan of Pedestrian Subway

4. Construction of Pedestrian Subway

During construction of the pedestrian subway, traffic management and utility protection were most significant. The subway was located in the middle of a 5-way traffic round-about and was constructed by open-cut method. Due to the 6-stage construction of arms and central concourse of the subway (Fig.3), existing traffic was diverted 6 times. This traffic management was planned and successfully executed in cooperation with Colombo City Traffic Police. The major proportion of existing utilities installed 50 years ago i.e. electricity cables, water supply pipes, telephone cables, sewage pipes and gas supply pipes were not relocated outside of work area. Therefore, the major part of open-cut excavation was executed manually with the utmost care, e.g. hanging services from H-beams.

Item	Description
1. Member	Road Development Authority, Consultant, Contractor, Ceylon Electricity Board, National Water & Drainage Board, Sri Lanka Telecom, Colombo Municipal Council
2. Frequency	
Regular Com.	Once per week
Steering Com.	Once per Month
3. Total No. of Obstruction	Electric Cable : 776 case Water Pipe : 249 case Sewage Pipe : 672 case Telephone Cable : 490 case Gas Pipe : 2 case
4. Check Point	Location Initial Date of Obstruction Party of Action Relocation or Not

Fig.4 Utility Obstruction Committee

5. Planning and Coordination for Utility Obstruction

Utilities obstructions were a fatal problem directly affecting the construction period and project cost. The utility obstruction committee (Fig.4) was established in the early stage of the work for planning, coordination, and settlement of utilities obstructions problems by all parties concerned. During more than 3 years of continuous meetings, not only were all such problems settled, but there was also successful technical transfer regarding planning and coordination.

6. Conclusion

Baseline Road Project (Phase-1) was completed with 20months delay to the schedule, due to utilities obstructions. Based on the precious project experiences in Hong Kong and Bangkok, the technical transfer of construction and safety management expertise were successfully executed by the construction of the first major railway crossing viaduct and pedestrian subway in Sri Lanka. The technical transfer of planning and coordination expertise for the removal of obstructions was successfully executed through the utility obstruction committee. Baseline Road Project (Phase-2) is now being smoothly constructed without delay based on the above described valuable experience. The most important objectives of Japanese ODA projects i.e. technical transfer, mutual understanding, and encouragement of local recourses, were achieved during course of the project.